



# **STIC Search Report**

**EIC 1700**

**STIC Database Tracking Number 152894**

**TO: Sin J Lee**  
**Location: REM 9D60**  
**Art Unit : 1752**  
**May 12, 2005**

**Case Serial Number: 10/728801**

**From: Usha Shrestha**  
**Location: EIC 1700**  
**REMSSEN 4B28**  
**Phone: 571/272-3519**  
**usha.shrestha@uspto.gov**

## **Search Notes**



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact *the EIC searcher or contact:*

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

- I am an examiner in Workgroup:  Example: 1713
- Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

- Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Priority  
#2

Access DB# 152994

## SEARCH REQUEST FORM

### Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 5-10-05  
Art Unit: 1752 Phone Number 302-1333 Serial Number: 101728801  
Mail Box and Bldg/Room Location: 7DEC4 Results Format Preferred (circle): PAPER DISK E-MAIL  
(rim.)

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Bib attached

Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

SCIENTIFIC REFERENCE BP  
Sci & Tech Inf. Ctr

MAY 10 2005

Pat. & T.M. Off.

Please search for the polysiloxazane ~~poly~~  
having, as its main repeating unit,  
those units shown in Cl. # 1  
(any one of those circled ones)

Searcher Phone #: \_\_\_\_\_

Searcher Location: \_\_\_\_\_

Date Searcher Picked Up: 5/12/05

Date Completed: 5/12/05

Searcher Prep & Review Time: 40

Clerical Prep Time: 30

Online Time: 120

AA Sequence (#) \_\_\_\_\_

Structure (#) 1

Bibliographic \_\_\_\_\_

Litigation \_\_\_\_\_

Fulltext \_\_\_\_\_

Patent Family \_\_\_\_\_

Other \_\_\_\_\_

Dialog \_\_\_\_\_

Questel/Orbit \_\_\_\_\_

Dr. Link \_\_\_\_\_

Lexis/Nexis \_\_\_\_\_

Sequence Systems \_\_\_\_\_

WWW/Internet \_\_\_\_\_

Other (specify) \_\_\_\_\_

Serial No. 10/728,801  
 Filed: December 8, 2003

*Submit  
 Search.*

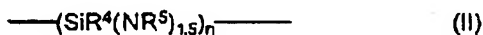
### Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original) A photosensitive polysilazane composition comprising a polysilazane or its modification product and a photoacid generator, wherein said polysilazane or its modification product is

a polysiloxazane having a number-average molecular weight of between 300 to 100,000 that contains, as its main repeating unit,  $-(\text{RSi}(\text{NR}^6)_{1.6})-$ ,  $-(\text{RSi}(\text{NR}^6)\text{O}_{0.5})-$ ,  $-(\text{RSi}(\text{NR}^6)_{0.5}\text{O})-$ ,  $-(\text{RSiO}_{1.5})-$  or  $-(\text{SiO}_2)-$ , wherein R and R<sup>6</sup> respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, and alkylamino group or an alkylsilyl group or

a polysilazane having a number-average molecular weight of between 100 to 100,000, that mainly contains the skeleton represented with the following general formula (II),



wherein R<sup>4</sup> and R<sup>5</sup> respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, a group other than these groups in which the portion bonded directly to the silicon or nitrogen is carbon, an alkylsilyl group, alkylamino group or an alkoxy group, and n is an arbitrary integer, and wherein

said photoacid generator is at least one type of compound selected from the group consisting of a peroxide and a nitrobenzyl ester.

2. (original) The photosensitive polysilazane composition according to claim 1 wherein said polysilazane is a polysilazane having a number average molecular weight of 100 to 100,000 that mainly contains the skeleton represented by general formula (II).



## UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office  
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P.O. Box 1450  
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www.uspto.gov

## \*BIBDATASHEET\*

Bib Data Sheet

CONFIRMATION NO. 8923

SERIAL NUMBER 10/728,801	FILING DATE 12/08/2003  RULE	CLASS 430	GROUP ART UNIT 1752	ATTORNEY DOCKET NO. FN4104US-CIP
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APPLICANTS

Tatsuro Nagahara, Kakegawa-shi, JAPAN;  
Hideki Matsuo, Kakegawa-shi, JAPAN;  
Tomoko Aoki, Kakegawa-shi, JAPAN; Kazuhiro Yamada, Tochigi-ken, JAPAN;

\*\* CONTINUING DATA \*\*\*\*\*  
This application is a CIP of 09/806,852 06/18/2001 ABN \* SJL  
(\*)Data provided by applicant is not consistent with PTO records.

\*\* FOREIGN APPLICATIONS \*\*\*\*\*  
JAPAN 10-282697 10/05/1998 SJL  
JAPAN PCT/JP99/05498 10/05/1999

IF REQUIRED, FOREIGN FILING LICENSE GRANTED  
\*\* 01/16/2004

Foreign Priority claimed <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	STATE OR COUNTRY JAPAN	SHEETS DRAWING 3	TOTAL CLAIMS 19	INDEPENDENT CLAIMS 2
35 USC 119 (a-d) conditions met <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after Allowance				
Verified and Acknowledged Examiner's Signature _____ Initials _____				

ADDRESS  
Alan P. Kass  
Clariant Corporation  
70 Meister Avenue  
Somerville, NJ  
08876

TITLE  
Photosensitive polysilazane composition and method of forming patterned polysilazane film

<input type="checkbox"/> All Fees
<input type="checkbox"/> 1.16 Fees ( Filing )

=> fil reg

FILE 'REGISTRY' ENTERED AT 13:41:47 ON 12 MAY 2005  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
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=> d his

FILE 'HCAPLUS' ENTERED AT 10:12:48 ON 12 MAY 2005  
L1 2 S US20040081912/PN  
SEL RN

FILE 'REGISTRY' ENTERED AT 10:14:00 ON 12 MAY 2005  
L2 14 S E1-E14

FILE 'LREGISTRY' ENTERED AT 12:12:49 ON 12 MAY 2005  
L3 STR

FILE 'REGISTRY' ENTERED AT 12:15:41 ON 12 MAY 2005  
L4 50 S L3  
L5 SCR 2043  
L6 50 S L3 AND L5  
L7 2048 S L3 AND L5 FUL  
SAV L7 LEE801/A  
L8 STR L3  
L9 13 S L8 SAM SUB=L7  
L10 277 S L8 FUL SUB=L7  
L11 5 S L7 AND L2

FILE 'HCAPLUS' ENTERED AT 12:50:39 ON 12 MAY 2005  
L12 147 S L10  
L13 1273 S L7  
L14 149 S L13(L)?RESIST?  
L15 25 S L14 AND PHOTO?/SC,SX  
L16 29 S L12(L)?RESIST?  
L17 6 S L16 AND PHOTO?/SC,SX

FILE 'REGISTRY' ENTERED AT 13:08:47 ON 12 MAY 2005  
L18 1771 S L7 NOT L10

FILE 'HCAPLUS' ENTERED AT 13:09:23 ON 12 MAY 2005  
L19 1164 S L18  
L20 129 S L19(L)?RESIST?  
L21 22 S L20 AND PHOTO?/SC,SX  
L22 25 S L17 OR L15  
L23 49 S L12 AND ?RESIST?  
L24 9 S L23 AND PHOTO?/SC,SX  
L25 19 S L21 NOT L24

FILE 'REGISTRY' ENTERED AT 13:39:50 ON 12 MAY 2005

FILE 'HCAPLUS' ENTERED AT 13:40:22 ON 12 MAY 2005

FILE 'REGISTRY' ENTERED AT 13:41:47 ON 12 MAY 2005

=> d que l12  
L3 STR

G1~Si~N~G1	Ak~N	Ak~Si	O~Ak
3 1 2 4	@5 @6	@7 @8	@9 @10

VAR G1=H/AK/CB/5/6/7/8/9/10

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE

L5 SCR 2043

L7 2048 SEA FILE=REGISTRY SSS FUL L3 AND L5

L8 STR

11

O

}

G1~Si~N~G1	Ak~N	Ak~Si	O~Ak
3 1 2 4	@5 @6	@7 @8	@9 @10

VAR G1=H/AK/CB/5/6/7/8/9/10

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 11

STEREO ATTRIBUTES: NONE

L10 277 SEA FILE=REGISTRY SUB=L7 SSS FUL L8

L12 147 SEA FILE=HCAPLUS ABB=ON PLU=ON L10

=&gt; fil hcap

FILE 'HCAPLUS' ENTERED AT 13:42:15 ON 12 MAY 2005

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=&gt; d 124 1-9 ibib abs hitstr hitind

L24 ANSWER 1 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:861932 HCAPLUS

DOCUMENT NUMBER: 134:30180

TITLE: Method for forming polyimide pattern using  
photosensitive polyimide composition

INVENTOR(S): Itatani, Hiroshi; Matsumoto, Shunichi;

Itatani, Tarou; Sakamoto, Tsunenori;

Gorwadkar, Sucheta; Komuro, Masanori

PATENT ASSIGNEE(S): PI R and D Co., Ltd., Japan

SOURCE: PCT Int. Appl., 38 pp.

USHA SHRESTHA EIC 1700 REM 4B28

DOCUMENT TYPE: CODEN: PIXXD2  
 LANGUAGE: Patent  
 FAMILY ACC. NUM. COUNT: 1 Japanese  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000073853	A1	20001207	WO 2000-JP73853	2000 0531
W: JP, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
JP 2003098667	A2	20030404	JP 1999-189469	1999 0531
WO 2000073853	A1	20001207	WO 2000-JP3502	2000 0531
W: JP, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1199604	A1	20020424	EP 2000-935501	2000 0531
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY				
US 6777159	B1	20040817	US 2002-980212	2002 0318
PRIORITY APPLN. INFO.:				
			JP 1999-189469	A 1999 0531
			JP 2000-105593	A 2000 0216
			WO 2000-JP3502	W 2000 0531

AB A pos.-type photosensitive polyimide composition comprises a photolytically acid-generating agent and a solvent-soluble polyimide which is obtained by polycondensation of  $\geq 1$  aliphatic tetracarboxylic dianhydride and/or alicyclic tetracarboxylic dianhydride (e.g., cis-1,2,3,4-cyclopentanetetracarboxylic dianhydride) with  $\geq 1$  aliphatic tetracarboxylic acid diamine and/or alicyclic tetracarboxylic acid diamine [e.g., 1,3-bis(3-aminopropyl)tetramethyldisiloxane], and exhibits pos.-type photosensitivity in the presence of the photolytically acid generating agent. A method for forming a neg.-type polyimide pattern comprises irradiating an electron beam to a coating of the above polyimide in the absence of the photolytically acid-generating agent.

IT 311773-07-6P 311773-11-2P  
 (method for forming polyimide pattern using photosensitive

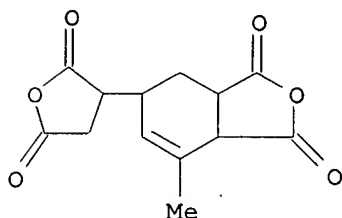


polyimide composition)  
 RN 311773-07-6 HCAPLUS  
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with  
 1,3-disiloxanediamine, 2,2'-dithiobis[ethanamine],  
 3a,4,5,7a-tetrahydro-7-methyl-5-(tetrahydro-2,5-dioxo-3-furanyl)-  
 1,3-isobenzofurandione and 2,4,8,10-tetraoxaspiro[5.5]undecane-3,9-  
 dipropanamine (9CI) (CA INDEX NAME)

CM 1

CRN 73003-90-4

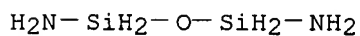
CMF C13 H12 O6



CM 2

CRN 71134-22-0

CMF H8 N2 O Si2



CM 3

CRN 21587-74-6

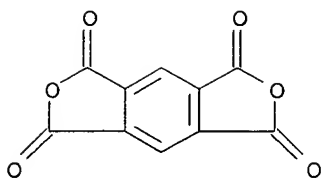
CMF C13 H26 N2 O4



CM 4

CRN 89-32-7

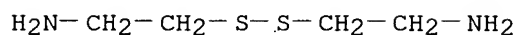
CMF C10 H2 O6



CM 5

CRN 51-85-4

CMF C4 H12 N2 S2



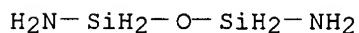
RN 311773-11-2 HCAPLUS

CN 4,8-Etheno-1H,3H-benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone,  
 3a,4,4a,7a,8,8a-hexahydro-, polymer with 1,3-  
 cyclohexanedimethanamine, 1,3-disiloxanediamine,  
 2,2'-dithiobis[ethanamine] and rel-(3aR,3bS,6aS,7aR)-tetrahydro-1H-  
 cyclopenta[1,2-c:3,4-c']difuran-1,3,4,6(3aH)-tetrone (9CI) (CA  
 INDEX NAME)

CM 1

CRN 71134-22-0

CMF H8 N2 O Si2

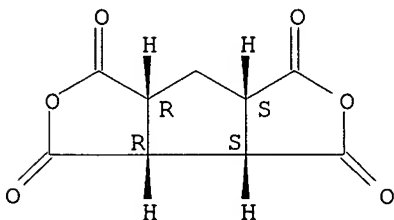


CM 2

CRN 4802-47-5

CMF C9 H6 O6

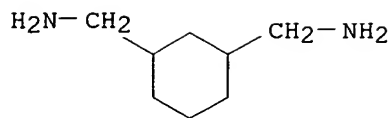
Relative stereochemistry.



CM 3

CRN 2579-20-6

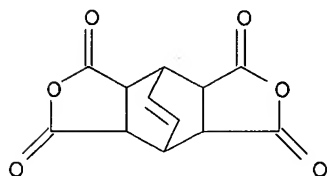
CMF C8 H18 N2



CM 4

CRN 1719-83-1

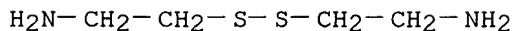
CMF C12 H8 O6



CM 5

CRN 51-85-4

CMF C4 H12 N2 S2



IC G03F007-037; C08G073-10; C08L079-08

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 37, 73, 74

IT Electron beams

Negative **photoresists**

Optical materials

Photolithography

Polymerization

Polymerization catalysts

Positive **photoresists**

(method for forming polyimide pattern using photosensitive polyimide composition)

IT 311773-04-3P 311773-05-4P 311773-06-5P **311773-07-6P**311773-08-7P 311773-09-8P 311773-10-1P **311773-11-2P**

311773-12-3P 311773-13-4P 311773-14-5P

(method for forming polyimide pattern using photosensitive polyimide composition)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L24 ANSWER 2 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:271577 HCAPLUS

DOCUMENT NUMBER: 130:289209

TITLE: Polyimide composition for positive  
**photoresist**

USHA SHRESTHA EIC 1700 REM 4B28

INVENTOR(S): Itatani, Hiroshi; Matsumoto, Shunichi  
 PATENT ASSIGNEE(S): PI R & D Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 112 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9919771	A1	19990422	WO 1998-JP4577	1998 1012
W: CN, JP, KR, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1024407	A1	20000802	EP 1998-947813	1998 1012
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
US 6627377	B1	20030930	US 2000-529382	2000 0626
PRIORITY APPLN. INFO.:			JP 1997-315781	A 1997 1013
			JP 1997-320266	A 1997 1016
			JP 1997-353987	A 1997 1117
			JP 1997-353988	A 1997 1117
			JP 1997-363044	A 1997 1125
			JP 1997-363045	A 1997 1125
			JP 1997-363378	A 1997 1126
			JP 1997-365491	A 1997 1202
			JP 1997-370187	A

1997  
1222JP 1998-31933 A  
1998  
0105JP 1998-108410 A  
1998  
0316JP 1997-352987 A  
1997  
1117WO 1998-JP4577 W  
1998  
1012

AB A photosensitive polyimide composition is soluble in organic solvents, excellent in adhesiveness, heat **resistance**, mech. characteristics and flexibility, and is capable of exhibiting alkali-soluble, highly sensitive pos. **photoresist** characteristics upon irradiation with light. The composition comprises a photo-acid generator and a solvent soluble polyimide exhibiting pos. photosensitivity in the presence of the generator.

IT 222843-06-3P, 3,4,3',4'-Biphenyltetracarboxylic acid dianhydride-3,4,3',4'-benzophenonetetracarboxylic acid dianhydride-2,4-diaminotoluene-diaminosiloxane-3,4-diaminodiphenyl ether-2,2-bis[4-(4-aminophenoxy)phenyl]hexafluoropropane block copolymer  
(polyimide composition for pos. **photoresist**)

RN 222843-06-3 HCAPLUS

CN [5,5'-Biisobenzofuran]-1,1',3,3'-tetrone, polymer with , 5,5'-carbonylbis[1,3-isobenzofurandione], 1,3-disiloxanediamine, 4-methyl-1,3-benzenediamine, 4,4'-oxybis[1,2-benzenediamine] and 4,4'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis(4,1-phenyleneoxy)]bis[benzenamine], block (9CI) (CA INDEX NAME)

CM 1

CRN 71134-22-0

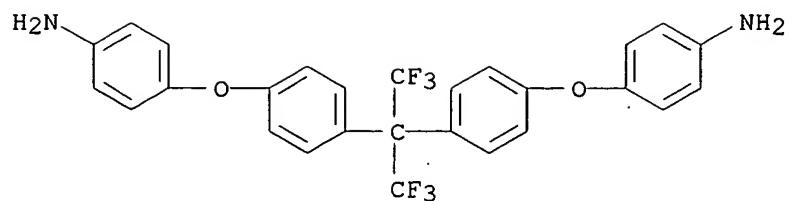
CMF H8 N2 O Si2

$$\text{H}_2\text{N}-\text{SiH}_2-\text{O}-\text{SiH}_2-\text{NH}_2$$

CM 2

CRN 69563-88-8

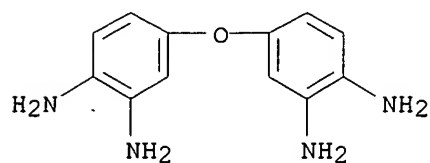
CMF C27 H20 F6 N2 O2



CM 3

CRN 2676-59-7

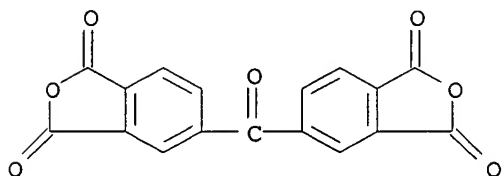
CMF C12 H14 N4 O



CM 4

CRN 2421-28-5

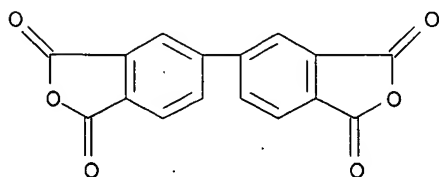
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CM 5

CRN 2420-87-3

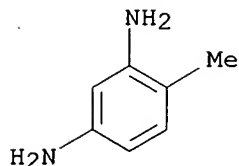
CMF C16 H6 O6



CM 6

CRN 95-80-7

CMF C7 H10 N2



IC ICM G03F007-039  
ICS G03F007-022; G03F007-004; C08L079-08; C09D179-08; C08G073-10;  
H05K003-28; H05K003-46; H01L021-027

CC 74-5 (Radiation Chemistry, **Photochemistry**, and  
**Photographic** and Other Reprographic Processes)  
Section cross-reference(s): 35

ST polyimide compn pos **photoresist**

IT Positive **photoresists**  
(polyimide composition for pos. **photoresist**)

IT Polyimides, uses  
(polyimide composition for pos. **photoresist**)

IT 15499-84-0P  
(polyimide composition for pos. **photoresist**)

IT 80180-96-7P, 3,3',4,4'-Benzophenonetetracarboxylic  
dianhydride-2,4-diaminotoluene-3,3'-dimethoxy-4,4'-diaminobiphenyl  
copolymer 87182-96-5P, 2,2-Bis[4-(4-  
aminophenoxy)phenyl]hexafluoropropane-4,4'-[2,2,2-trifluoro-1-  
(trifluoromethyl)ethylidene]bis(1,2-benzenedicarboxylic acid  
dianhydride) copolymer 134096-63-2P 144279-09-4P  
162735-41-3P 177190-29-3P 177190-34-0P 186967-17-9P  
222842-97-9P, 3,4,3',4'-Biphenyltetracarboxylic acid  
dianhydride-2,2-bis[4-(4-aminophenoxy)phenyl]propane-2,3-  
diaminodiphenyl ether copolymer 222843-01-8P  
**222843-06-3P**, 3,4,3',4'-Biphenyltetracarboxylic acid  
dianhydride-3,4,3',4'-benzophenonetetracarboxylic acid  
dianhydride-2,4-diaminotoluene-diaminosiloxane-3,4-diaminodiphenyl  
ether-2,2-bis[4-(4-aminophenoxy)phenyl]hexafluoropropane block  
copolymer 222843-27-8P, m-BAPS-3,4,3',4'-  
benzophenonetetracarboxylic acid dianhydride-9,9-bis(4-  
aminophenyl)fluorene-3,4,3',4'-Biphenyltetracarboxylic acid  
dianhydride-3,5-diaminobenzoic acid block copolymer 222843-32-5P  
222843-36-9P, 3,4,3',4'-Benzophenonetetracarboxylic Acid  
Dianhydride-4,4'-diaminodiphenylsulfide-3,4,3',4'-biphenyl  
tetracarboxylic Acid Dianhydride-3,3'-dihydroxybenzidine-m-BAPS  
block copolymer 222843-50-7P 222843-56-3P 222843-63-2P  
222843-70-1P 222843-77-8P 222843-82-5P 222843-88-1P  
222843-94-9P 222843-98-3P 222844-05-5P 222844-10-2P  
222844-17-9P 222844-25-9P 222844-32-8P 222844-44-2P  
222844-51-1P 222844-59-9P 222844-67-9P 222844-73-7P,  
3,3',4,4'-Biphenyltetracarboxylic dianhydride; diaminosilane;  
γ-valerolactone; 3,4,3',4'-benzophenonetetracarboxylic  
dianhydride; 3,3'-dihydroxy-4,4'-diaminobiphenyl;  
3,4'-diaminodiphenyl ether block copolymer 222844-82-8P  
222844-87-3P 222844-93-1P 222844-96-4P 222845-03-6P  
222845-07-0P, 3,3',4,4'-Benzophenonetetracarboxylic acid  
dianhydride-3,3'-dinitro-4,4'-diaminodiphenyl-bis[4-(3-  
Aminophenyl)phenyl]sulfone copolymer 222845-11-6P 222845-17-2P  
222845-23-0P 222845-26-3P 222845-32-1P 222845-38-7P,

3,3',4,4'-Biphenyltetracarboxylic acid anhydride-1,5-diaminoanthraquinone-2,2-bis[4-(3-aminophenoxy)phenyl]propane copolymer 222845-43-4P 222845-53-6P 222845-58-1P 222845-63-8P 222845-68-3P, 3,3',4,4'-Benzophenonetetracarboxylic acid dianhydride-1,4-bis(3-aminopropyl)piperazine-bis[4-(3-aminophenoxy)phenyl]sulfone copolymer 222845-73-0P 222845-77-4P 222845-83-2P 222845-89-8P 222845-95-6P 222846-01-7P 222846-08-4P 222846-13-1P 222846-18-6P 222846-23-3P, 3,3',4,4'-Biphenyltetracarboxylic acid dianhydride-bis-4-(3-aminophenoxy)phenylsulfone-2,2-bis-[4-(3-aminophenoxy)phenyl]hexafluoropropane copolymer 222846-30-2P 222846-54-0P 222846-63-1P 222846-79-9P 222846-83-5P 222846-88-0P, 3,4,3',4'-Biphenyltetracarboxylic acid dianhydride-2,2-ditrifluoromethylbendzidine-2,2-bis[4-(4-aminophenoxy)phenyl]propane-3,5-diaminobenzoic acid block copolymer 222846-93-7P

(polyimide composition for pos. **photoresist**)

IT 86-73-7, Fluorene

(polyimide composition for pos. **photoresist**)

IT 83803-86-5 222843-16-5, m-BAPS-3,3'-dimethylbendzidine-4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis(1,2-benzenedicarboxylic acid dianhydride) copolymer 222843-21-2, m-BAPS-bicyclo(2,2,2)-octa-7-ene-2,3,5,6-tetracarboxylic acid dianhydride-pyromellitic acid dianhydride copolymer 222843-41-6, 2,2-Bis[4-(4-aminophenoxy)phenyl]propane-3,4,3',4'-Biphenyltetracarboxylic dianhydride-3,5-diaminobenzoic acid-pyromellitic acid dianhydride-2,2'-bis(trifluoromethyl)benzidine block copolymer

(polyimide composition for pos. **photoresist**)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 3 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:695258 HCAPLUS

DOCUMENT NUMBER: 130:66817

TITLE: Poly(siloxyethylene glycol) as a new candidate for a functional organosilicon polymers

AUTHOR(S): Aoki, Hidetoshi; Nagasaki, Yukio

CORPORATE SOURCE: R & D Center, Hokushin Corporation, Yokohama, 230, Japan

SOURCE: Current Trends in Polymer Science (1997), 2, 83-94

CODEN: CTSCFK

PUBLISHER: Research Trends

DOCUMENT TYPE: Journal; General Review

LANGUAGE: English

AB A review with 51 refs. on the synthesis and unique properties of poly(siloxyethylene glycol) (PSEG). PSEG, an alternating oligo(dimethylsiloxane)-oligo(ethylene glycol), was prepared from diethylamino-terminated polydimethylsiloxane and PEG.. The preparation, physicochem. properties, hydrolytic stability in aqueous media, and use as a neg. working **resist** are reviewed and discussed. Since PSEG consists of two very flexible components, it is anticipated to show high flexibility. As is well known, DMSO is a hydrophobic and OEG is a hydrophilic materials. Thus, PSEG homolog has alternative hydrophilic/hydrophobic units in the main chain. By changing the hydrophilic/hydrophobic balance, the characteristics of the polymer, especially the solubility in water can be



controlled. For example, PSEG(2/7), where the nos. in parenthesis represent number of OEG unit and DMSO units, resp., was soluble in cold water. With increasing temperature, the solution become turbid, which is well know as a lower critical solution temperature (LCST). The LCST can be controlled by the hydrophilic/hydrophobic balance in the main chain. Therefore, PSEG homologues are anticipated for thermo-sensitive material which shows a rapid response. The PSEGs are anticipated not only as a thermo-sensitive hydrogel but also as **resist** materials because of they are Si-containing polymer. Since the PSEGs show the LCST, they can be developed in water below the LCST. This is big advantage for the **resist** processing in lithog.

IT 218129-37-4P

(preparation, unique properties, and potential use as neg. **resist** of)

RN 218129-37-4 HCAPLUS

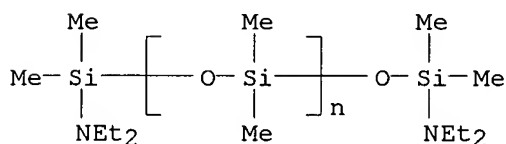
CN Poly[oxy(dimethylsilylene)],  $\alpha$ -[(diethylamino)dimethylsilyl]- $\omega$ -[[diethylamino)dimethylsilyl]oxy]-, polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl), block (9CI)  
(CA INDEX NAME)

CM 1

CRN 169336-65-6

CMF (C2 H6 O Si)<sub>n</sub> C12 H32 N2 O Si2

CCI PMS

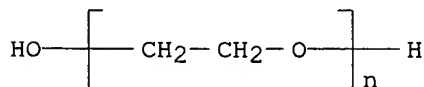


CM 2

CRN 25322-68-3

CMF (C2 H4 O)<sub>n</sub> H2 O

CCI PMS



CC 35-0 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 37, 38, 74

ST review block polydimethylsiloxane polyoxyethylene prepn property;  
**resist** polysiloxylethylene glycol prepn property review

IT **Resists**

(neg.-working; preparation, unique properties, and potential use of poly(siloxylethylene glycol) as)

IT Polysiloxanes, preparation

Polysiloxanes, preparation

(polyoxyalkylene-, block; preparation, unique properties, and potential use as neg. **resist** of)

IT Polyoxyalkylenes, preparation  
 Polyoxyalkylenes, preparation  
 (polysiloxane-, block; preparation, unique properties, and potential  
 use as neg. **resist** of)  
 IT 156309-06-7P, Dimethylsilanediol-ethylene oxide block copolymer  
**218129-37-4P**  
 (preparation, unique properties, and potential use as neg.  
**resist** of)

REFERENCE COUNT: 52 THERE ARE 52 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L24 ANSWER 4 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:350400 HCAPLUS

DOCUMENT NUMBER: 127:5501

TITLE: Polyoxyalkylene-polysiloxanes for  
**photoresists** having improved  
 dimensional stability and their manufacture

INVENTOR(S): Kato, Masao; Nagasaki, Yukio; Matsukura,  
 Fumiaki; Tokuda, Takashi; Aoki, Hidetoshi

PATENT ASSIGNEE(S): Hokushin Kogyo K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

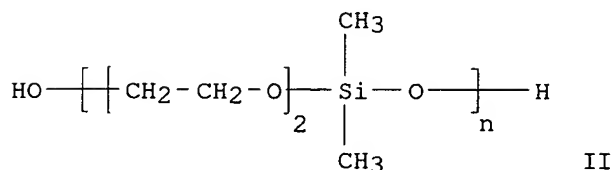
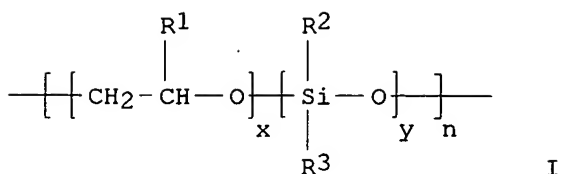
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 09071658	A2	19970318	JP 1995-229145	1995 0906
JP 2004169041	A2	20040617	JP 2004-6076	2004 0113
JP 2004211098	A2	20040729	JP 2004-34064	2004 0210
PRIORITY APPLN. INFO.:			JP 1995-229145	A3 1995 0906
			JP 2004-6076	A3 2004 0113

GI



AB Polymers comprising alternating oligo oxyalkylene chains and oligo siloxane chains have structural repeating unit I (R<sup>1</sup> = C1-5 alkyl, aryl, aralkyl; R<sup>2</sup>, R<sup>3</sup> = H, OH, C1-7 alkoxy, phenoxy, C1-10 alkyl, aryl, aralkyl, halogenated alkyl, halogenated aryl, alkylcarbonyloxy, arylcarbonyloxy, CN, sulfonate group, carboxylic acid ester group, ether- or acyl-containing group; x, y = 1-10; n = 1-10,000) and are prepared by the reaction of an oligo oxyalkylene compound with an oligo siloxane compound. Thus bis(diethylamino)dimethylsilane and diethylene glycol were polymerized in THF at room temperature for 24 h to give polymer II (n = 40) having number-average mol. weight 6500. The polymers have **resistance** to reactive oxygen plasma etching and improved dimensional stability.

IT 189369-60-6P

(polyoxyalkylene-polysiloxane alternating polymers for photoresists)

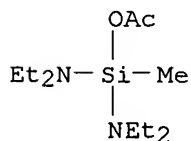
RN 189369-60-6 HCAPLUS

CN Ethanol, 2,2'-[1,2-ethanediylbis(oxy)]bis-, polymer with bis(diethylamino)methylsilyl acetate (9CI) (CA INDEX NAME)

CM 1

CRN 189369-59-3

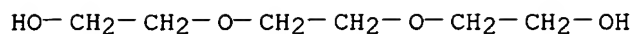
CMF C11 H26 N2 O2 Si



CM 2

CRN 112-27-6

CMF C6 H14 O4



IT 179953-13-0P 189369-43-5P 189369-45-7P  
189369-55-9P 189369-57-1P

(polyoxyalkylene-polysiloxane alternating polymers for  
photoresists)

RN 179953-13-0 HCAPLUS

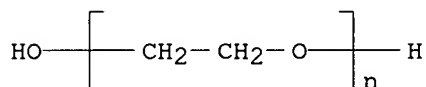
CN 1,3-Disiloxanedi-amine, N,N,N',N'-tetraethyl-1,1,3,3-tetramethyl-,  
polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl)  
(9CI) (CA INDEX NAME)

CM 1

CRN 25322-68-3

CMF (C2 H4 O)<sub>n</sub> H2 O

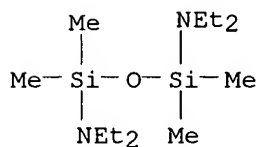
CCI PMS



CM 2

CRN 14759-97-8

CMF C12 H32 N2 O Si2



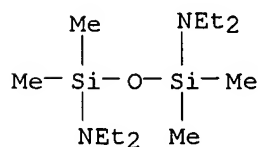
RN 189369-43-5 HCAPLUS

CN Ethanol, 2,2'-[1,2-ethanediylbis(oxy)]bis-, polymer with  
N,N,N',N'-tetraethyl-1,1,3,3-tetramethyl-1,3-disiloxanedi-amine  
(9CI) (CA INDEX NAME)

CM 1

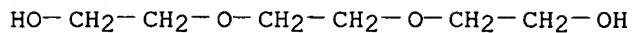
CRN 14759-97-8

CMF C12 H32 N2 O Si2



CM 2

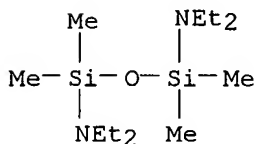
CRN 112-27-6  
CMF C6 H14 O4



RN 189369-45-7 HCAPLUS  
CN Ethanol, 2,2'-[oxybis(2,1-ethanediylxy)]bis-, polymer with  
N,N,N',N'-tetraethyl-1,1,3,3-tetramethyl-1,3-disiloxanediamine  
(9CI) (CA INDEX NAME)

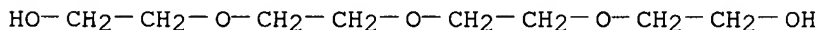
CM 1

CRN 14759-97-8  
CMF C12 H32 N2 O Si2



CM 2

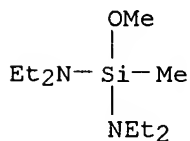
CRN 112-60-7  
CMF C8 H18 O5



RN 189369-55-9 HCAPLUS  
CN Ethanol, 2,2'-oxybis-, polymer with N,N,N',N'-tetraethyl-1-methoxy-  
1-methylsilanediamine (9CI) (CA INDEX NAME)

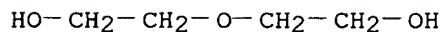
CM 1

CRN 64451-48-5  
CMF C10 H26 N2 O Si



CM 2

CRN 111-46-6  
CMF C4 H10 O3

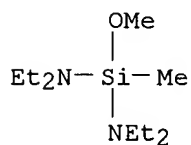


RN 189369-57-1 HCAPLUS  
 CN Ethanol, 2,2'-[1,2-ethanediylbis(oxy)]bis-, polymer with  
 N,N,N',N'-tetraethyl-1-methoxy-1-methylsilanedi-amine (9CI) (CA  
 INDEX NAME)

CM 1

CRN 64451-48-5

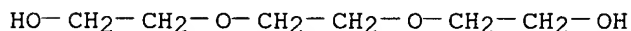
CMF C10 H26 N2 O Si



CM 2

CRN 112-27-6

CMF C6 H14 O4



IC ICM C08G077-46,  
 ICS C08G077-06; G03F007-038; G03F007-039; G03F007-075;  
 H01L021-027  
 CC 35-5 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 74  
 ST polyoxyalkylene siloxane alternating **photoresist**  
 IT Polysiloxanes, preparation  
 Polysiloxanes, preparation  
 (polyoxyalkylene-, alternating; polyoxyalkylene-polysiloxane  
 alternating polymers for **photoresists**)  
 IT **Photoresists**  
 (polyoxyalkylene-polysiloxane alternating polymers for  
**photoresists**)  
 IT Polyoxyalkylenes, preparation  
 Polyoxyalkylenes, preparation  
 (polysiloxane-, alternating; polyoxyalkylene-polysiloxane  
 alternating polymers for **photoresists**)  
 IT 189369-47-9P 189369-48-0P **189369-60-6P** 189369-61-7P  
 (polyoxyalkylene-polysiloxane alternating polymers for  
**photoresists**)  
 IT 26499-73-0P 96141-31-0P 96161-61-4P 102188-13-6P  
 102244-02-0P 179953-12-9P **179953-13-0P** 189369-40-2P  
 189369-41-3P 189369-42-4P **189369-43-5P** 189369-44-6P  
**189369-45-7P** 189369-46-8P 189369-49-1P 189369-50-4P  
 189369-51-5P 189369-52-6P 189369-53-7P 189369-54-8P  
**189369-55-9P** 189369-56-0P **189369-57-1P**  
 189369-58-2P

## (polyoxyalkylene-polysiloxane alternating polymers for photoresists)

L24 ANSWER 5 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1997:140370 HCAPLUS  
 DOCUMENT NUMBER: 126:226590  
 TITLE: Thermally stable polysiloxane release agents  
 INVENTOR(S): Chen, Tsang J.; Nielsen, Paul L.; Chen, Jiann-hsing  
 PATENT ASSIGNEE(S): Eastman Kodak Company, USA  
 SOURCE: U.S., 8 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

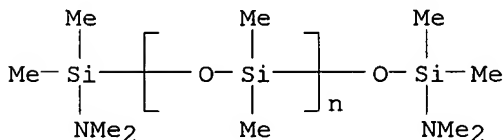
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5604039	A	19970218	US 1996-589666	1996 0122
PRIORITY APPLN. INFO.: US 1996-589666				1996 0122

AB A release agent consists of a blend .apprx.99% of poly(organosiloxane) fluid and .apprx.1% phenol-functionalized poly(organosiloxane) fluid when used at elevated temps. does not produce insol. or undesirable byproducts or gelation. The release agent is particularly suited for application to a fuser member for fusing toner images to a receiver. Thus a blend of poly(dimethylsiloxane) and 0.5% phenol-terminated poly(dimethylsiloxane) [made by reaction of 2,2-Bis(4-hydroxyphenyl)hexafluoropropane with amino-terminated poly(dimethylsiloxane)] (weight-average mol. weight 9340) was heated at 200°; showing viscosity 60,000, 60,000, and 51,000 cSt after 0, 192, and 576 h.

IT 97969-56-7DP, reaction product with bis(hydroxyphenyl)hexafluoropropane (thermally stable polysiloxane release agents)

RN 97969-56-7 HCAPLUS

CN Poly[oxy(dimethylsilylene)],  $\alpha$ -[(dimethylamino)dimethylsilyl]- $\omega$ -[(dimethylamino)dimethylsilyloxy]- (9CI) (CA INDEX NAME)



IC ICM B32B009-04

INCL 428447000

CC 42-10 (Coatings, Inks, and Related Products)  
 Section cross-reference(s): 37, 74

ST phenol terminal polydimethylsiloxane blend heat **resistant**  
; polydimethylsiloxane blend heat **resistant**; release  
agent polydimethylsiloxane toner fuser

IT Heat-**resistant** materials  
(containing phenol-terminal polysiloxane; thermally stable  
polysiloxane release agents for)

IT 1478-61-1DP, reaction product with amino-terminated  
poly(dimethylsiloxane) 1745-81-9DP, o-Allyl phenol, reaction  
product with polydimethylsiloxane 31900-57-9DP,  
Dimethylsilanediol homopolymer, reaction product with ortho-allyl  
phenol **97969-56-7DP**, reaction product with  
bis(hydroxyphenyl)hexafluoropropane 156118-35-3DP,  
Dimethylsilanediol-methylsilanediol copolymer, reaction product  
with ortho-allyl phenol 157169-80-7P 188348-81-4P  
(thermally stable polysiloxane release agents)

L24 ANSWER 6 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1996:562970 HCAPLUS

DOCUMENT NUMBER: 125:198153

TITLE: Epoxy resin compositions and semiconductor  
devices with low internal stress and improved  
**resistance** to moisture, thermal shock,  
and high temperature

INVENTOR(S): Kobayashi, Hironori; Okuda, Satoshi

PATENT ASSIGNEE(S): Nitto Denko Corp, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 08188640	A2	19960723	JP 1995-3391	1995 0112
JP 3468900	B2	20031117		
PRIORITY APPLN. INFO.:			JP 1995-3391	1995 0112

AB Semiconductor devices are sealed with the title compns. containing (A) epoxy resins, (B) novolak phenolic resins, (C) modified resins obtained by melting and mixing (a) epoxy resins and/or novolak phenolic resins, (b) Me methacrylate (I)-butadiene (II)-styrene (III) copolymer with average particle diameter 0.01-5  $\mu$ m, and (c) silicone oils, and (D) inorg. fillers. Thus, 20 parts 44.4:25.1:30.4 I-III-II graft copolymer with particle diameter 0.10  $\mu$ m and 100 parts o-cresol novolak-type epoxy resin were blended at 100°, then 43 parts the obtained resin was kneaded at 100° with o-cresol novolak-type epoxy resin 64, phenolic novolak 50, brominated novolak epoxy resin 10, Sb2O3 8, vitreous SiO2 500, 2-methylimidazole 2, carnauba wax 6, carbon powder 5, and  $\gamma$ -glycidoxypropyltrimethoxysilane 4 parts to give a packaging resin with spiral flow as determined by molding at 175° and 70 kg/cm2 for 2 min 72 cm. The resin was molded at 175° and post-cured at the same temperature to give test



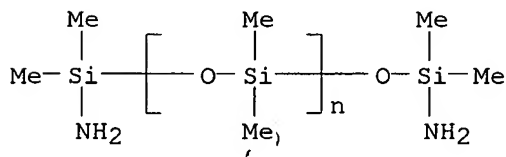
pieces with Young's modulus in flexure 1270 kPa, linear expansion coefficient 1.79 L/°C, and no Al corrosion by pressure cooker test for 200 h.

IT 163002-36-6

(epoxy resin compns. for semiconductor devices with low internal stress and improved **resistance** to moisture, thermal shock, and high temperature)

RN 163002-36-6 HCAPLUS

CN Poly[oxy(dimethylsilylene)],  $\alpha$ -(aminodimethylsilyl)- $\omega$ -[(aminodimethylsilyl)oxy]- (9CI) (CA INDEX NAME)



IC ICM C08G059-62

ICS C08L063-00; H01L023-29; H01L023-31

ICA C08G059-14

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 39, 74, 76

ST epoxy resin semiconductor device packaging; thermal shock **resistance** epoxy resin semiconductor; methyl methacrylate butadiene styrene graft copolymer; novolak phenolic resin semiconductor device packaging; silicone oil semiconductor device packaging; moisture **resistance** epoxy resin semiconductor

IT Electronic device packaging

Heat-**resistant** materials

Water-**resistant** materials

(epoxy resin compns. for semiconductor devices with low internal stress and improved **resistance** to moisture, thermal shock, and high temperature)

IT Siloxanes and Silicones, uses

(epoxy resin compns. for semiconductor devices with low internal stress and improved **resistance** to moisture, thermal shock, and high temperature)

IT Epoxy resins, uses

(epoxy resin compns. for semiconductor devices with low internal stress and improved **resistance** to moisture, thermal shock, and high temperature)

IT Rubber, synthetic

(butadiene-Me methacrylate-styrene, graft, epoxy resin compns. for semiconductor devices with low internal stress and improved **resistance** to moisture, thermal shock, and high temperature)

IT Phenolic resins, uses

(epoxy, novolak, epoxy resin compns. for semiconductor devices with low internal stress and improved **resistance** to moisture, thermal shock, and high temperature)

IT Epoxy resins, uses

(phenolic, novolak, epoxy resin compns. for semiconductor devices with low internal stress and improved **resistance** to moisture, thermal shock, and high temperature)

IT 31900-57-9D, Dimethylsilanediol homopolymer,  $\alpha$ -(aminodimethylsilyl)- $\omega$ -[(aminodimethylsilyl)oxy]-terminated

163002-36-6

(epoxy resin compns. for semiconductor devices with low

internal stress and improved **resistance** to moisture,  
thermal shock, and high temperature)  
IT 107080-92-2P, Butadiene-methyl methacrylate-styrene graft  
copolymer  
(rubber; epoxy resin compns. for semiconductor devices with low  
internal stress and improved **resistance** to moisture,  
thermal shock, and high temperature)  
IT 60676-86-0, Vitreous silica  
(epoxy resin compns. for semiconductor devices with low  
internal stress and improved **resistance** to moisture,  
thermal shock, and high temperature)

L24 ANSWER 7 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1990:414810 HCAPLUS  
DOCUMENT NUMBER: 113:14810  
TITLE: Heat-**resistant photoresist**  
INVENTOR(S): Wada, Keiichiro; Furukawa, Nobuyuki  
PATENT ASSIGNEE(S): Nippon Steel Chemical Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 01230631	A2	19890914	JP 1988-55958	1988 0311
PRIORITY APPLN. INFO.:			JP 1988-55958	1988 0311

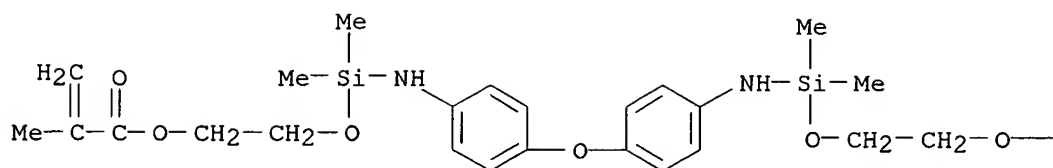
AB A tetracarboxylic anhydride is reacted with a silylated diamine  
containing photosensitive groups at  $\leq 100^\circ$  in an organic  
solvent. The resultant heat-**resistant** photosensitive  
polyimide or polyamidoimide is used as a **photoresist** for  
relief pattern formation during semiconductor device fabrication.

IT 127536-88-3 127536-90-7  
(**photoresist** composition using, for heat-**resist**  
**resist** pattern formation)  
RN 127536-88-3 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, oxybis[4,1-  
phenyleneimino(dimethylsilylene)oxy-2,1-ethanediyl] ester, polymer  
with 5,5'-carbonylbis[1,3-isobenzofurandione] (9CI) (CA INDEX  
NAME)

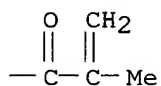
CM 1

CRN 127536-87-2  
CMF C28 H40 N2 O7 Si2

PAGE 1-A



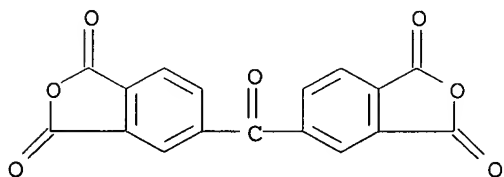
PAGE 1-B



CM 2

CRN 2421-28-5

CMF C17 H6 O7



RN 127536-90-7 HCAPLUS

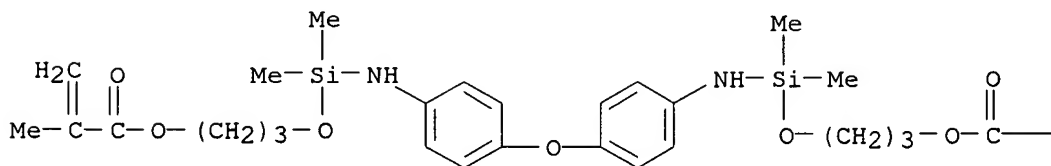
CN 2-Propenoic acid, 2-methyl-, oxybis[4,1-phenyleneimino(dimethylsilylene)oxy-3,1-propanediyl] ester, polymer with 5,5'-carbonylbis[1,3-isobenzofurandione] (9CI) (CA INDEX NAME)

CM 1

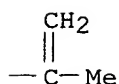
CRN 127536-89-4

CMF C30 H44 N2 O7 Si2

PAGE 1-A



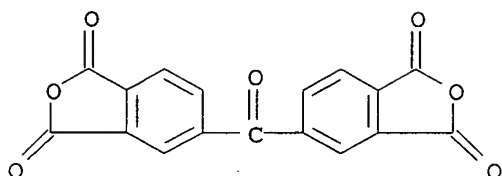
PAGE 1-B



CM 2

CRN 2421-28-5

CMF C17 H6 O7



IC ICM C08G073-10  
 ICS C08F002-48; C08F299-02; C08G071-02; C08G073-10  
 CC 74-5 (Radiation Chemistry, **Photochemistry**, and  
**Photographic** and Other Reprographic Processes)  
 Section cross-reference(s): 76  
 ST **photoresist** polyimide polyamide silylated;  
**resist** pattern polyimide polyamide  
 IT Semiconductor devices  
 (fabrication of, heat-**resistant resists**  
 for)  
 IT Polyimides, uses and miscellaneous  
 (**photoresists**, for heat-**resistant** pattern  
 formation)  
 IT **Resists**  
 (photo-, silylated polyimides and polyamidoimides as, for heat-  
**resistant** pattern formation)  
 IT 127536-86-1 **127536-88-3** 127536-90-7  
 127554-77-2 127706-32-5  
 (**photoresist** composition using, for heat-**resist**  
**resist** pattern formation)

L24 ANSWER 8 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1990:140836 HCAPLUS

DOCUMENT NUMBER: 112:140836

TITLE: Heat-**resistant** photocurable polyamic  
acid materials with low thermal expansionINVENTOR(S): Wada, Keiichiro; Furukawa, Nobuyuki; Watanabe,  
Takashi

PATENT ASSIGNEE(S): Nippon Steel Chemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

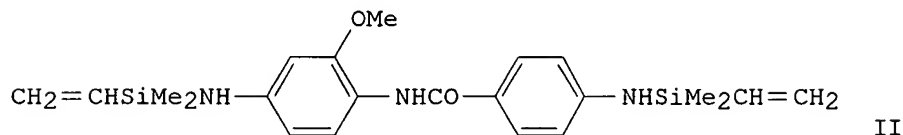
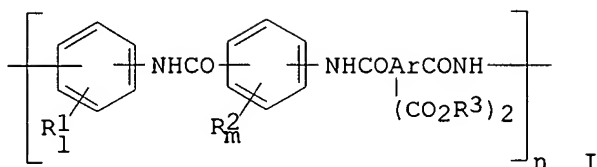
FAMILY ACC. NUM. COUNT: 1

USHA SHRESTHA EIC 1700 REM 4B28

## PATENT INFORMATION:

PATENT NO. -----	KIND -----	DATE -----	APPLICATION NO. -----	DATE
JP 01249831	A2	19891005	JP 1988-76384	1988 0331
PRIORITY APPLN. INFO.:			JP 1988-76384	1988 0331

GI



AB Title materials useful as insulators for printed circuit boards contain polymers with main units I (Ar = aromatic group; R1-2 = halo, organic group; R3 = Si-containing group polymerizable or crosslinkable by radiation;  $n \geq 1$ ;  $l, m = 0-4$ ). A solution of 39.6 g vinylsilane II in AcNMe<sub>2</sub> was treated with 21.8 g pyromellitic dianhydride at 40° for 5 h to give a viscous liquid which was mixed with 2.0 g Calcon diazide to give a photocurable solution which gave a cured film having thermal expansion coefficient 0.4 + 10-5/°C and 24-h water absorption 2.7%. A Si wafer was spin coated with the solution, dried, irradiated with UV light through a mask, immersed in MeCN-AcNMe<sub>2</sub> mixture, washed, and heated 5 min at 80°, 30 min at 150°, and 15 min at 360° to form a pattern with thermal decomposition initiation temperature 430°, vs. no pattern formation with bis[4-[(methacryloxypropyl)dimethylsilyl]amino]phenyl ether instead of II.

IT 125929-97-7P 125929-99-9P

(preparation of photocurable, for circuit board insulator)

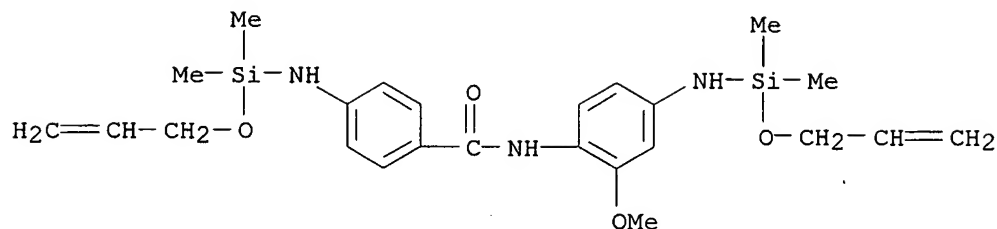
RN 125929-97-7 HCAPLUS

CN Benzamide, 4-[[dimethyl(2-propenyloxy)silyl]amino]-N-[4-[[dimethyl(2-propenyloxy)silyl]amino]-2-methoxyphenyl]-, polymer with 1H,3H-benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone (9CI) (CA INDEX NAME)

CM 1

CRN 125929-96-6

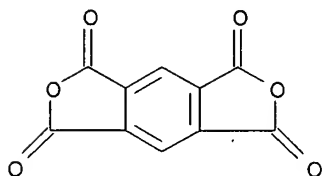
CMF C24 H35 N3 O4 Si2



CM 2

CRN 89-32-7

CMF C10 H2 O6



RN 125929-99-9 HCAPLUS

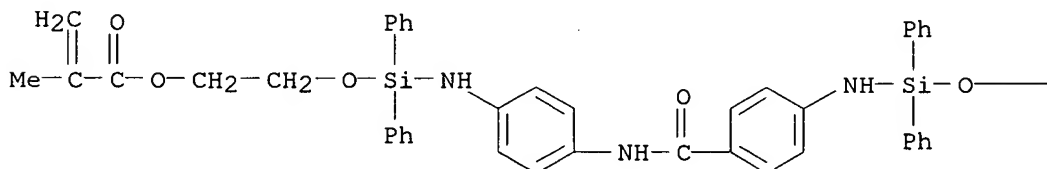
CN 2-Propenoic acid, 2-methyl-, 2-[[[4-[[4-[[[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethoxy]diphenylsilyl]amino]benzoyl]amino]phenyl]amino]diphenylsilyl]oxy]ethyl ester, polymer with 1H,3H-benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone (9CI) (CA INDEX NAME)

CM 1

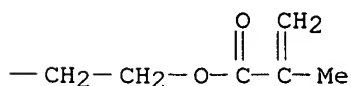
CRN 125929-98-8

CMF C49 H49 N3 O7 Si2

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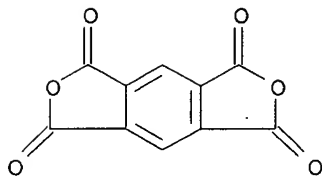
PAGE 1-B



CM 2

CRN 89-32-7

CMF C10 H2 O6



IC ICM C08G073-10  
ICS C08G073-10  
CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 37, 74, 76  
ST polyamic acid photocuring insulator; elec insulator printed circuit; polyimide polyamide photocuring insulator; thermal expansion elec insulator; circuit board insulator photocuring; crosslinking photochem elec insulator; **resist** photo circuit board  
IT Heat-**resistant** materials  
(polyamide-polyimides, as insulators for circuit boards)  
IT 125929-95-5P **125929-97-7P 125929-99-9P**  
125930-01-0P 125930-02-1P  
(preparation of photocurable, for circuit board insulator)

L24 ANSWER 9 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1988:229670 HCAPLUS  
DOCUMENT NUMBER: 108:229670  
TITLE: Polyamides for heat-**resistant** photosensitive materials  
INVENTOR(S): Imai, Yoshio; Ota, Takayuki  
PATENT ASSIGNEE(S): Mitsubishi Chemical Industries Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 62275129	A2	19871130	JP 1986-118590	1986 0523

PRIORITY APPLN. INFO.: JP 1986-118590  
1986  
0523

AB The title polymers are prepared from tetracarboxylic dianhydrides and diamines RSiR1R2NHZNHSiR3R4R5 (Z = divalent organic group; R-R5 = aliphatic or aromatic group; ≥1 of R-R5 contains light- or radiation-polymerizable double bond). Polymerizing 10 mmol N,N'-bis(methacryloxydimethylsilyl)-p,p'-diaminodiphenyl ether and

10 mmol pyromellitic dianhydride in N-methyl-2-pyrrolidone for 5 h gave a polyamide solution which was mixed with Michler's ketone, spin coated on glass, dried, cured with UV light through a mask, developed, and heated 30 min at 350° to give a heat-resistant relief image.

IT 114690-28-7P

(preparation of photocurable, for heat-resistant relief images)

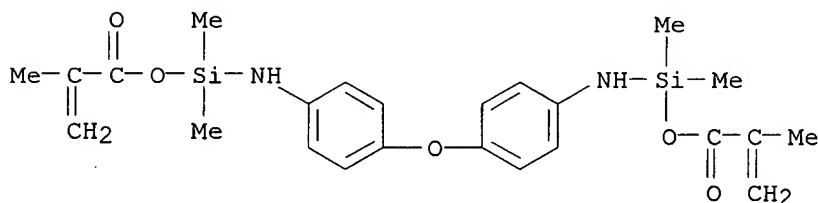
RN 114690-28-7 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, oxybis[4,1-phenyleneimino(dimethylsilylene)] ester, polymer with 1H,3H-benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone (9CI) (CA INDEX NAME)

CM 1.

CRN 114690-27-6

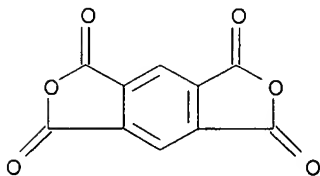
CMF C24 H32 N2 O5 Si2



CM 2

CRN 89-32-7

CMF C10 H2 O6



IC ICM C08G073-10

ICS C08F299-02; C08G073-10; G03C001-68; G03C001-71

CC 74-5 (Radiation Chemistry, **Photochemistry**, and **Photographic** and Other Reprographic Processes)

Section cross-reference(s): 37

ST heat **resistance** polyamide methacrylate; polyamide methacryloxysilylamine photocuring; silylamine methacryloxy polyamide photocuring; pyromellitic methacryloxysilylamine polyamide; amine methacryloxysilyl polyamide; **resist** photo methacryloxysilylamine polyamide; crosslinking photo polyamide methacrylate

IT Polyamides, uses and miscellaneous

(**photoresists**, methacryloxysilyl group-containing)

IT **Resists**

(photo-, bis[[(methacryloxydimethylsilyl)amino]phenyl])



ether-pyromellitic dianhydride copolymers for)  
IT 114690-28-7P  
(preparation of photocurable, for heat-resistant relief  
images)